



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/760,596	01/20/2004	Mario E. Bran	VERTE.075C1	1098

34132 7590 09/09/2004
COZEN O'CONNOR, P.C.
1900 MARKET STREET
PHILADELPHIA, PA 19103-3508

EXAMINER

KORNAKOV, MICHAIL

ART UNIT	PAPER NUMBER
----------	--------------

1746

DATE MAILED: 09/09/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/760,596

Applicant(s)

BRAN ET AL.

Examiner

Michael Komakov

Art Unit

1746

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 27 August 2004.
2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-38 is/are pending in the application.
4a) Of the above claim(s) _____ is/are withdrawn from consideration.
5) ☐ Claim(s) _____ is/are allowed.
6) ☒ Claim(s) 1-5, 7, 8, 17-21, 24-29 and 31-38 is/are rejected.
7) ☒ Claim(s) 6, 9-16, 22, 23 and 30 is/are objected to.
8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
10) ☒ The drawing(s) filed on 20 January 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 1/20/04.
4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

1. The submission of supplemental amendment, dated 08/27/2004 is noticed.

Claims 1-38 are currently pending.

2. Applicants are reminded that the continuity data of the instant application should be updated.

Specification

3. The specification is objected to as failing to provide proper antecedent basis for the claimed subject matter. See 37 CFR 1.75(d)(1) and MPEP § 608.01(o). Correction of the following is required: claim 27 recites “a **wall** with an opening”. The term “a wall” has not been located in the instant specification.

Claim Objections

4. Claim 27 is objected to because of the following informalities: claim 27 recites “a wall with an opening therein... wherein **wherein** the transmitter...”. Apparently the word “wherein” followed by the same word “wherein” is a typo. Appropriate correction is required.

Claim interpretation

5. Claim 27 recites “a wall with an opening through which gas is introduced to flow in contact with transducers”. Lacking the specificities, the recited wall is interpreted as part of the housing surrounding the transducer element, wherein the opening is

provided in order to introduce the cooling media inside the housing in order to cool the transducer.

Claim Rejections - 35 USC § 112

6. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

7. Claim 6 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Claim 6 recites the limitation "**the first source** of liquid".

There is insufficient antecedent basis for this limitation in the claim.

Claim Rejections - 35 USC § 102

8. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

9. Claims 1-5, 7,8,17-21,25,26,34,35,37,38 are rejected under 35 U.S.C. 102(b) as being anticipated by Lawson (U.S. 4,401,131).

Lawson teaches an apparatus for cleaning semiconductor wafers and a method of cleaning wafers utilizing such apparatus. The apparatus of Lawson includes a wafer holding chuck, incorporated into rotatable cup, cleaning liquid, piezoelectric transducer elements (reads on "a first source of sonic energy", as instantly claimed), a faceplate (reads on "transmitter", as instantly claimed), the said faceplate includes grooves (reads

on "elongate channel or elongate cutouts, that create a narrow edge lying directly adjacent the substrate first surface", as instantly claimed". In operation the chuck and cup assemblies are properly positioned, the wafer is raised so as to be in close proximity with the faceplate of the transducer assembly, as illustrated in FIG. 3.

Presently, a spacing of 30 to 40 thousandths of an inch is preferred. A cleaning liquid is introduced through the central aperture of the faceplate and distributed over the wafer surface. **The liquid acts not only as a cleaner itself but also a medium through which ultrasonic energy is coupled from the faceplate to the surface of the wafer** so as to dislodge contaminants or coatings to be removed. Once liquid has flooded the gap between the faceplate and the wafer, the ultrasonic transducer may be energized (see Abstract, col.1, lines 45-49; col.2, lines 18-19, 32-60; col.3, lines 14-46; Fig 5).

Regarding the limitation, which is concerned with attenuating the sonic energy or reducing a ratio of normal incident waves to shallow angle waves, it is noticed here that since the assembly of Lawson and the steps of its operation are essentially the same as instantly claimed, the attenuating of sonic energy is inherently present in the teaching of Lawson. Mere recitation of a newly discovered function or property, that is inherently possessed by things in the prior art does not cause a claim drawn to these things to distinguish over the prior art, consult *In Re Leinoff v. Louis Milona & Sons, Inc.* 220 USPQ 845 (CAFC 1984).

Claim Rejections - 35 USC § 103

10. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

11. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

12. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

13. Claim 36 is rejected under 35 U.S.C. 103(a) as being unpatentable over Lawson.

The teaching of Lawson remains silent about rotating the wafer while the liquid

and sonic energy are applied to its surface. However, rotating the wafer during the sonic treatment is conventional and widely utilized in the art in order to enhance distribution of cleaning liquid over the wafer surface. Therefore, having a wafer holder, incorporated into rotatable cup, the skilled artisan would have found obvious to rotate the wafer during the application of cleaning liquid, thus providing the even distribution of cleaning liquid over the wafer surface and enhancing wafer cleaning in the teaching of Lawson with the reasonable expectation of success.

14. Claims 24, 27-29, 31-33 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lawson in view of Bran (U.S. 6,295,999).

While teaching the apparatus with structural elements identical to those instantly claimed, Lawson remains silent about material, the face plate is made of. Bran teaches non-contaminating materials, which may be employed for efficient transmitting of sonic energy, such as quartz, sapphire, silicon carbide, boron nitride, vitreous carbon, glassy carbon coated graphite (col.4, lines 7-16). Therefore, one skilled in the art motivated by Bran would have found obvious to utilize either material provided by Bran for the face plate in order to provide efficient transmitting of sonic energy and contaminant free environment in the apparatus of Lawson with the reasonable expectation of success.

Lawson also does not specifically indicate a wall with an opening through which gas may be introduced to flow in contact with the transducer. However, providing a cooling media to transducers during their operation is known in the art. Thus, Bran

Art Unit: 1746

teaches that applying an energy to the transducer generates considerable heat, which could present damage to the transducer (col.7, lines 12-17), thus motivating the skilled artisan to cool the transducer. Bran also teaches the benefits of using gaseous coolant (col.7, lines 27-32). Therefore, one skilled in the art motivated by Bran would have found obvious to cool the transducer elements with gaseous coolant by providing an opening in the transducer assembly housing of Lawson, wherein the opening is adapted to provide a gaseous cooling media, in order to avoid damage of transducer elements in the teaching of Lawson.

Allowable Subject Matter

15. Claims 9-16, 22, 23, 30 objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

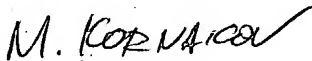
16. Claim 6 would be allowable if rewritten to overcome the rejection(s) under 35 U.S.C. 112, 2nd paragraph, set forth in this Office action and to include all of the limitations of the base claim and any intervening claims.

17. The following is a statement of reasons for the indication of allowable subject matter: no other prior art that anticipates or suggests fairly the presence of a sprayer and transmitter comprising an elongated probe, in combination with the other structural elements as provided by the instant claims, has been located as of the date of this office action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Michael Kornakov whose telephone number is (571) 272-1303. The examiner can normally be reached on 9:00am - 5:30pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Michael Barr can be reached on (571) 272-1414. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Michael Kornakov
Primary Examiner
Art Unit 1746

08/30/2004